p. m. a decided backing set in, and it was thought that, although the center was not more than 30 or 40 miles to the northward, it might pass to the eastward, but the backing did not continue. The barometer continued to fall at an accelerated rate, and at 9:13 p. m. was falling at the rate of 0.435 inch per hour. As already stated, the center of the calm area passed a little to the eastward of the observatory.

[To be continued.]

NOTES BY THE EDITOR.

CIVIL SERVICE EXAMINATIONS.

As the Weather Bureau desires to stimulate the study of meteorology in the schools and colleges, so as to disseminate rational methods of studying the weather map and the atmosphere, so, on the other hand, it needs to secure for its own service employees whose knowledge of the sciences warrants the expectation that they will individually exert a healthy influence in favor of the highest progress in every branch of the service. Parallel with the steady progress that is being made throughout this country in teaching all branches of natural science, there has also been a steady progress in the requirements for entrance into the service of the Weather Bureau. During the years 1870 to 1886 the elementary common school education was required before enlistment, and the special training in meteorological duties was acquired either at the school of instruction or at the regular stations. After 1880 a special effort was made to secure young college graduates or students, and many such men entered the service. In 1881 four gentlemen (Upton, Waldo, Hazen, and Russell) were added to the civil list, at salaries slightly above those of observers. They were graduates of long standing and had already distinguished themselves by activity in work bearing on the duties of the Bureau; they were accepted on the strength of their records, without special examination, as in the case of the full professors, Lapham, Abbe, Maury, Ferrel, and Mendenhall. In 1884, after the resignation of Mr. Upton, his place was filled by the help of the first civil service examination with which the Weather Bureau had to do, and one of the first of so high a grade that had as yet been established by the Civil Service Commission. Several of our best scientific men entered into this examination; one of these, Prof. R. S. Woodward, would undoubtedly have received the appointment had he not in the meantime been far more handsomely provided for by the United States Geological Survey; but his interest in meteorology as a part of the study of the whole earth has led him to the publication of several mathematical papers of importance to our science. At present, as the head of the Department of Mechanics in the school of pure science in Columbia University, New York City, he is doing much to turn the attention of young men toward investigations in meteorology. As the result of this examination, General Hazen selected Prof. C. F. Marvin to fill the vacancy, and his excellent record abundantly justifies the civil service method of making such appointments. During 1888–1895 the position of "meteorological clerk" was filled by competitive examination. Professor Bigelow was appointed in 1891 on his record, but since that date there has been no appointment and no promotion except by examination. Professor Moore, in 1894, and Professor Garriott, in 1895, were appointed after long competitive examinations.

From 1886 to 1893, in the absence of any special school of instruction, it was the custom to at first assign those who entered the service to instruction under the older observers in charge of the respective stations. In the latter year all the positions in the Weather Bureau were placed within the classified service; since this date, therefore, it has been necessary to arrange a system of examinations for those who desire the position of "Weather Bureau observer" or the higher scientific and technical positions up to anything below the grade of Chief or Assistant Chief of Bureau. This principle of examination applies uniformly throughout all the bureaus and divisions of the Department of Agriculture, and, for that matter, throughout the other branches of the departmental service. In his Instructions No. 85, November 11, 1897, Professor Moore commended a course of study in English, arithmetic, algebra, trigonometry, physics, astronomy, and botany to those observers who desire to receive higher rating as to efficiency. The great variety of work that falls to the duty of the employees of the Weather Bureau demands corresponding versatility, adaptability, and energy.

The last "Manual of examinations for the classified Civil Service, Form 302, January, 1898," gives full details as to the examinations for observers and assistants, on pages 50 and 32, respectively. It appears from a table on page 22 that during the fiscal year ending June 30, 1895, there were 44 examined for the position of observer, of whom 28 passed to the list of eligibles and 2 were selected to fill vacancies at $840 per annum; during the fiscal year ended June 30, 1896, 34 were examined, 22 passed and 1 was appointed; during the fiscal year ended June 30, 1897, 37 were examined, 23 passed and 6 were appointed; in October, 1897, the fall examinations were held, and 20 have since been appointed. A number of appointments will probably be made in the Weather Bureau when the results of the spring examination are known.

At the present time preparations are being made for two examinations to be held on Monday, April 25; one of these is to establish a new list of eligibles for the position of "Observer, Weather Bureau," the other for that of "Assistant in the Department of Agriculture." The examination for observer is outlined in section 91 of the above-mentioned manual and will embrace the following subjects with the respective weights: Spelling, 5; arithmetic, 5; letter-writing, 5; penmanship, 5; copying from plain copy, 5; copying from a rough draft, 5; practical questions in meteorology, 40; an essay on a practical subject in meteorology, 20; geography of the United States, 10; total, 100.

The examination for assistant in the Department of Agriculture will embrace three subjects, scientific or technical, bearing directly upon the work of the particular bureau or division of the Department. Thus, for one entering the Weather Bureau the applicant must be examined in meteorology as a major, but in physical geography of the United States and general physics as the two minors. Beside these certain other subjects are considered as electives, such as the languages, Latin, French, German, Italian, or Spanish. The whole list of subjects and the corresponding relative weights is as follows: Orthography, 1.5; arithmetic, 2.5; letter-writing, 2.5; penmanship, 1.5; copying, 2; general training and experience (namely, the applicant's past record), 5; English composition, 5; major examination in one special scientific or technical subject, 50; minor examinations in two required subjects, both together, 20; minor examinations in additional electives, 10; total, 100.

This "Manual of examinations" gives on pages 27 and 50 some questions illustrating the character of past examinations for the position of observer. A copy of the manual can be had gratuitously by direct application to the United States Civil Service Commission. A new schedule of dates for the

fall examinations which occur in the months of September and October will be furnished on request after July 15. Those who desire to take the spring examinations for observer in the Weather Bureau should apply before April 15 to the Civil Service Commission for a copy of the general application blank, Form 304.

The Editor sees no reason why the public high schools and State colleges throughout the land should not make it their duty to teach enough science and modern languages to enable their graduates to pass these and the other examinations that are prescribed by the Civil Service before one can fill the higher positions in the Governmental service. The National Government has a right to look to those colleges, universities, and scientific schools *that have been founded or fostered by its benevolence* to provide the education needed by those who have to prosecute its work.

As a university is a collection of colleges and faculties under one general organization, so our national "University of the United States" must be nothing less than this collection of fifty or sixty State institutions that have directly or indirectly received aid from the National Government. If the intellectual and educational status of these so-called State institutions were to be submitted to the general oversight of the proper federal officer, in order to bring them all up to the required standard, as is now done with regard to the financial status of the Agricultural experiment stations, we should soon realize one of the ideals that so many have been looking for.

PROMOTION FOR MERIT.

That the Honorable the Secretary of Agriculture heartily approves of the efforts of the Chief of the Weather Bureau to maintain the service in a high state of efficiency is in no way more thoroughly shown than by his recent letter announcing that "preferment in this Bureau will be made only in recognition of merit and special fitness." The letter was printed in full for the use of Weather Bureau officials in Instructions No. 18 of 1898; but the following paragraphs seem worthy of reproduction in the MONTHLY WEATHER REVIEW:

Often the saving of hundreds of lives and the protection to millions of dollars' worth of property depend upon the alertness, scientific training, and executive ability of both subordinates and controlling officials of the Weather Bureau. When efficiently officered, this service is of such utility to the commerce and industry of the country that I wish it to be distinctly understood that preferment in this important Bureau of the Department of Agriculture will be made only in recognition of merit and special fitness. In this way, and in this way only, can the Department meet the demands that are made upon the weather service and maintain the high standard required of its officials. The Department is frequently annoyed and embarrassed by letters and petitions from extraneous sources, as in your case, which are inspired by employees seeking advancement to positions which they may not be qualified to fill or to which other employees of greater ability are more eligible.

The Chief of the Weather Bureau, having a complete record of the work performed by each employee therein, is better able to determine the fitness of officials for advancement and assignment than are those not familiar with the details of the service, no matter how much the latter may have the welfare of the public service at heart.

The annoying of United States Senators, Representatives, and other distinguished persons, or representative commercial bodies, with selfish importunities is to be deprecated, and will militate against the persons who may employ, encourage, or countenance such action. Officials of the Weather Bureau are expected to have the confidence and respect of prominent representative men in their localities, and it will at all times be pleasing to receive evidences of efficiency on the part of Weather Bureau officials and of the value of their service to the public; but such testimonials must not be the result of promptings or importunities of the employee interested.

You are an observer with a fair record in one of the minor grades. Were you to succeed in effecting your promotion to the grade of Section Director over the heads of many officials of higher rank and superior qualifications, the same line of procedure might in course of time be exercised to your personal detriment and some other official displace you by the same method. If you have merit, it will be recognized in due course of time as the needs of the service render possible and as the comparative merits of your coworkers render practicable and just.

AN AMERICAN METEOROLOGICAL SOCIETY.

In order to advance the interests of any enterprise it is common to form an association and hold regular meetings for discussing the subject. Many societies, academies, and associations have thus contributed to the development of science, but it would be unfair to say that these have done more for science than has been done by individual efforts, or by the influence of universities and scientific schools. The formation of a voluntary association of individuals implies that there is a common need, and that the association can subserve the common interest. It would not be wise to add to the scientific organizations or to the scientific periodicals at present existing, unless there be a reasonable prospect of accomplishing something desirable that is not done by the existing institutions.

So far as concerns meteorology and climatology there are doubtless many features whose development can be especially furthered by local clubs, each of these to embrace the few persons who are especially interested in such matters, and can easily meet together or correspond with each other. Thus a club of three or four in any city or university could cooperate in investigating local clouds, auroras, thunderstorms, frost, hail, the vertical distribution of temperature, and numerous other local problems. A group of a half dozen or more stations within a few miles of each other could, by maintaining the most delicate self-recording apparatus, determine on the one hand the nature, origin, and movement of the sudden variations of the barometer and their connection with gusts of wind and falling rain, and on the other hand the relations in general between the wind directions and the isobars at that spot on the earth's surface. Pairs of observers, at high and low stations, could investigate the weight of the intermediate column of air and its relation to the observed pressures, temperatures, and moisture; two cloud observers, or photographers, and one kite flyer could, by preconcerted action, determine the altitude and details of the clouds and their relations to sunshine and the temperature and moisture of the layers of air in their neighborhood. The relation of local climate to any special crop is another matter of very special investigation, but the general laws that result therefrom must interest the whole scientific world. These little clubs of interested students represent narrow specialties, matters of which a general association may take cognizance, but to which it should not be confined.

If there is to be a general meteorological society it would be best to have its membership include all America, i. e., the United States and Canada, and as far as possible Mexico, the West Indies, and Central America, since every part of this great region is mutually interested in the weather and the climate of the other parts. Moreover, the storms, the northers, the cold waves, the hot waves, the rains, and the general peculiarities of the successive seasons can be properly studied only when we take cognizance of a very large region of atmosphere. But of course an association that covers so large an area can at the best have only an annual or triennial meeting; the interest of the members in each other's work and in the general progress of meteorology must, necessarily, be kept up by means of an efficient meteorological journal whose expenses must be wholly defrayed by the society. There are few, if any, scientific journals whose subscription lists defray anything more than a small portion of the expense, to say nothing of the salary of the editor. The percentage of self-sustaining journals is even less than the percentage of books that pay the authors an appreciable income, and yet we print books and sell them